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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,024	04/30/2008	Valerie Frankard	1187-31	4438

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EXAMINER	
COLLINS, CYNTHIA E	

ART UNIT	PAPER NUMBER
1638	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/584,024	FRANKARD ET AL.
	Examiner	Art Unit
	CYNTHIA COLLINS	1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-20* is/are pending in the application.

4a) Of the above claim(s) *15-20* is/are withdrawn from consideration.

5)☒ Claim(s) *1,9 and 10* is/are allowed.

6)☒ Claim(s) *2-4,6-8 and 11-14* is/are rejected.

7)☒ Claim(s) *3,4,7,8,13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed November 30, 2010 has been entered.

In the Amendment filed November 30, 2010:

Claim 5 is cancelled.

Claims 1, 4, 6 and 14 are currently amended.

Claims 2-3, 7-8, 10-13 and 15-20 are withdrawn.

Claim 9 is withdrawn currently amended.

Claims 1-4 and 6-20 are pending..

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

All previous objections and rejections not set forth below have been withdrawn.

Election/Restrictions

Claim 1 is allowable. The restriction requirement between inventions I-VI as set forth in the Office action mailed on May 14, 2010, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim.** Claims 2-3, 7-8 and 10-13, directed to the method according to claim 1, 2, 6, 9 and 11, are no longer withdrawn from consideration because the claim(s) requires all the limitations of an allowable claim. However, claims 15-20, directed to a construct and a plant, are withdrawn from consideration because they do not require all the limitations of an allowable claim.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Allowable Subject Matter

Claims 1 and 9-10 are allowed.

Claim 13 is objected to as being dependent upon an objected base claim (claim 2), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Objections

Claims 3, 7 and 8 are objected to because the claims do not comply with the requirements of 37 CFR 1.821-1.185, which requires that reference be made to a sequence by use of the sequence identifier, preceded by "SEQ ID NO:" in the text of the description or claims, even if the sequence is also embedded in the text of the description or claims of the patent application. Appropriate correction is required.

Claim 4 is objected to because of the following informalities: the word cyclin is misspelled in line 2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6, and claims 7-8 dependent thereon, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. Claim 6 requires a cyclin A2 nucleic acid molecule encoding a cyclin A2 protein that is a variant cyclin A2 sequence selected from:(i) functional portions of a cyclin A2;1, A;;2, A2;3 or A2;4 nucleic acid molecule; (ii) sequences capable of hybridising to a cyclin A2;1, A2;2, A2;3 or A2:4 nucleic acid molecule/gene; (iii) alternative splice variants of a cyclin A2;1, A2;2, A2;3 or A2;4 nucleic acid molecule/gene; (iv) allelic variants of a cyclin A2:1, A2;2, A2;3 or A2;4 nucleic acid molecule/gene; (v) variants of (i) through (iv) due to the degeneracy of the genetic code; and (vi) homologues, derivatives and active fragments of a cyclin A2:1.A2;2, A2;3 or A2;4 protein. The species recited (i)-(vi) do not find support in the specification as filed, and thus constitute new matter.

While Applicants maintain that support for the amendments to claim 6 may be found on pages 6-7 of the specification (pages 11-12 of the response filed November 30, 2010), the Examiner maintains that pages 6-7 of the specification do not support the recited species (i)-(vi).

Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 14 is drawn to plants obtainable by a method according to claim 1. Accordingly, claim 14 is drawn to plants transgenic for any cyclin A nucleic acid molecule operably linked to a seed-preferred promoter and encoding a cyclin A protein, wherein the plant exhibits at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant.

The specification describes *Oryza sativa* (rice) plants transgenic for an *Arabidopsis thaliana* cyclin A2;2 nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1 and encoding the amino acid sequence of SEQ ID NO:2, wherein the cyclin A2;2 nucleic acid molecule is operably linked to a seed-preferred rice prolamin promoter having the nucleotide sequence of SEQ ID NO:3 wherein the plants exhibit increased seed weight, increased number of filled seeds, increased seed number, increased harvest index, and increased thousand kernel weight, relative to a corresponding control plant (pages 22-29).

The specification does not describe plants transgenic for other types of cyclin A nucleic acid molecules operably linked to a seed-preferred promoter and encoding a cyclin A protein, wherein the plant exhibits at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant, or plants that exhibit increased seed size or modified seed composition relative to a corresponding control plant, or the structural features of cyclin A nucleic acid molecules or proteins that are correlated with their ability to cause a plant to exhibit at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant. The prior art is also silent with respect to whether other types of cyclin A nucleic acid molecules would, when expressed from a seed-preferred promoter, cause a plant to exhibit at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant.

It was also known in the art at the time of filing that plant and animal A-type cyclins exhibit several observable differences, and that plants possess multiple types of A-type cyclins that differ in structure and possibly also in function.

See, for example, Chaubet-Gigot N. (Plant A-type cyclins. Plant Mol Biol. 2000 Aug;43(5-6):659-75. Review), who teaches that plant A-type cyclins can be classified into three groups on the basis of their structure, whereas animals possess only one A-type cyclin, raising the question of whether the three groups represent A-type cyclins with redundant functions or

whether a specific function is associated with each A-type cyclin group (page 660 column 2 last paragraph). Chaubet-Gigot N. also teaches that plant A-type cyclins from different species belonging to the same A-type cyclin group are more closely related to each other than they are to plant A-type cyclins from the same species belong to a different A-type cyclin group, suggesting that A-type cyclins belonging to different subgroups are likely to fulfill specific functions (paragraph spanning pages 661-662). Chaubet-Gigot N. additionally teaches that differences in observed transcriptional regulation and tissue specificity of plant A-type cyclins also suggest that the different CycA groups have different functions in cell proliferation and in the cell cycle (page 662 last paragraph through page 666 column 2 first paragraph). Chaubet-Gigot N. further teaches that the equivalence between plant A-type cyclins and animal A-type cyclins does not appear to be simple to establish in view of the observed differences in their amounts present during the cell cycle as well as their subcellular locations (paragraph spanning pages 672-673).

See also, for example, Setiady YY et al. (Tobacco mitotic cyclins: cloning, characterization, gene expression and functional assay. Plant J. 1995 Dec;8(6):949-57), who teach that N-terminal truncated Ntcyc25 (a CycA1 cyclin A – see Renaudin JP et al. Plant Mol Biol. 1996 Dec;32(6):1003-18, page 1006 Table 1) was able to completely rescue a G1 cyclin mutant of *Saccharomyces cerevisiae*, whereas N-terminal truncated Ntcyc27 (a CycA2 cyclin A – see Renaudin JP et al. Plant Mol Biol. 1996 Dec;32(6):1003-18, page 1006 Table 1) was not, although the full-length Ntcyc27 could partially rescue the mutant (page 953 column 2; page 954 Figure 6).

The Federal Circuit has clarified the application of the written description requirement. The court stated that "A description of a genus of cDNAs may be achieved by means of

recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus." See *University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1569; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The court has also affirmed the PTO's applicable standard for determining compliance with the written description requirement, quoting from the PTO's Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, P1, "Written Description" Requirement, 66 Fed. Reg. 1099, 1106, where it is set forth that the written description requirement can be met by "show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics ... i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." See *Enzo Biochem Inc. v. Gen-Probe Inc.*, 63 USPQ2d 1609, 1613 (CAFC 2002)

In the instant case Applicant has not described a representative number of species falling within the scope of the genus of cyclin A nucleic acid molecules required to practice the claimed invention, which genus encompasses cyclin A nucleic acid molecules that, when expressed from a seed-preferred promoter, cause a plant to exhibit at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant, nor the structural features unique to the genus that are correlated with this function.

Further, given the differences observed between plant and animal A-type cyclins and the structural diversity of plant A-type cyclins and their potential functional diversity, given the silence of the prior art with respect to whether cyclin A nucleic acid molecules other than an *Arabidopsis thaliana* cyclin A2;2 nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1 would, when expressed from a seed-preferred promoter, cause a plant to exhibit at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant, given the breadth of the claim which encompasses plants transgenic for any type of cyclin A nucleic acid molecule obtained from any source operably linked to a seed-preferred promoter and encoding a cyclin A protein, wherein the plant exhibits at least one of increased seed weight, increased number of filled seeds, increased seed number, increased seed size, increased harvest index, increased thousand kernel weight or modified seed composition, each relative to a corresponding control plant, and given the reduction to practice of only a single species, one skilled in the art would not recognize that the applicant was in possession of the claimed invention as a whole at the time of filing.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4, and claims 6-8 and 11-12 dependent thereon, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 is indefinite in the recitation of "further comprising". It is unclear how a cyclin A2 protein could "further" comprise the recited

motif, because the recited motif is disclosed as being the distinguishing feature of a cyclin A2 protein (paragraph spanning pages 6-7 of the specification). It is suggested that the claim be amended to replace "further comprising" with "comprising" in order to overcome the rejection.

Claim 6, and claims 7-8 dependent thereon, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 is indefinite in part (vi). It is unclear how the nucleic acid molecule can be a homologue, derivative or active fragment of a cyclin protein, since nucleic acid molecules and proteins are different types of compositions.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 is indefinite in the recitation of "a variant cyclin A of (i) to (v)", as there is insufficient antecedent basis for this limitation in the claim.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 is indefinite in the recitation of "said variant cyclin A of (vi)", as there is insufficient antecedent basis for this limitation in the claim.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. Regarding claim 12, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

The following is a quotation of the fourth paragraph of 35 U.S.C. 112:

> Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

Claim 6, and claims 7-8 dependent thereon, are rejected under 35 U.S.C. 112, fourth paragraph, for failing to further limit the subject matter of a previous claim. Claim 6 does not further limit claim 4, because claim 4 does not encompass all of the species recited in claim 6. Claim 4 does not include variants because claim 4 is limited to a cyclin A2 selected from cyclin A2; 1, cyclin A;2;2, cyclin A2;3 and cyclin A2;4. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Double Patenting

Claim 2 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 3 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 7 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 6. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 8 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 6. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Remarks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA COLLINS whose telephone number is (571)272-0794. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Collins/
Primary Examiner, Art Unit 1638

CC